

Barriers and Ways to Develop R290 RAC



Li tingxun

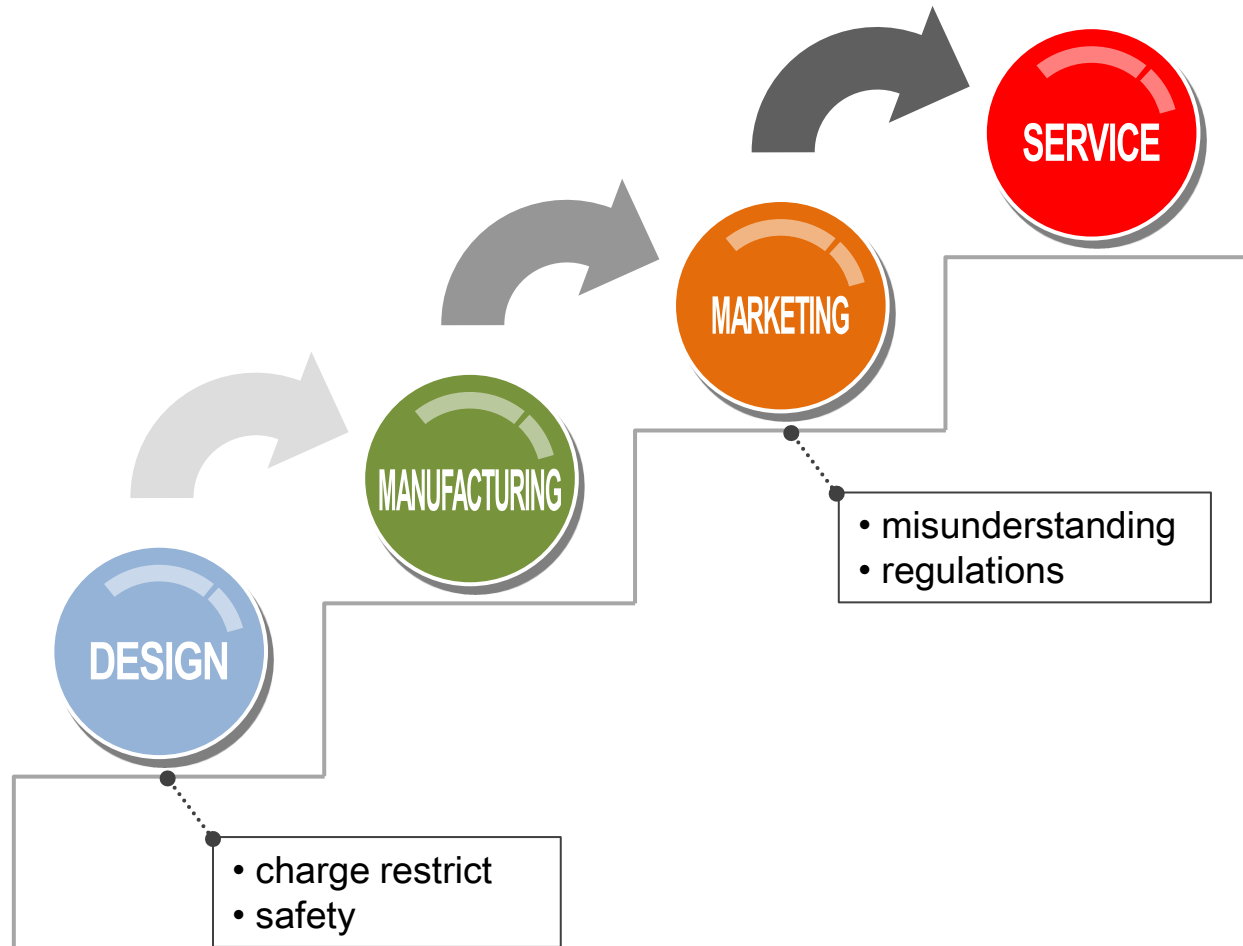
Litx@hotmail.com

3 Jun, 2013

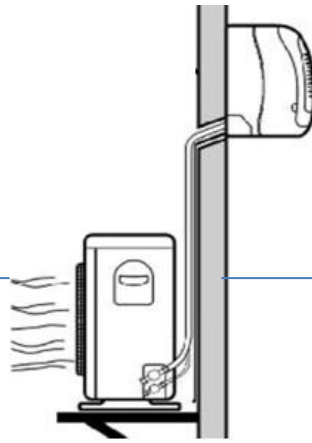
Midea Air-conditioning & Refrigeration

Midea has the most complete and largest Air Conditioner production chain in China. The main products include RAC, commercial air conditioner, refrigerator, washing machine and compressor

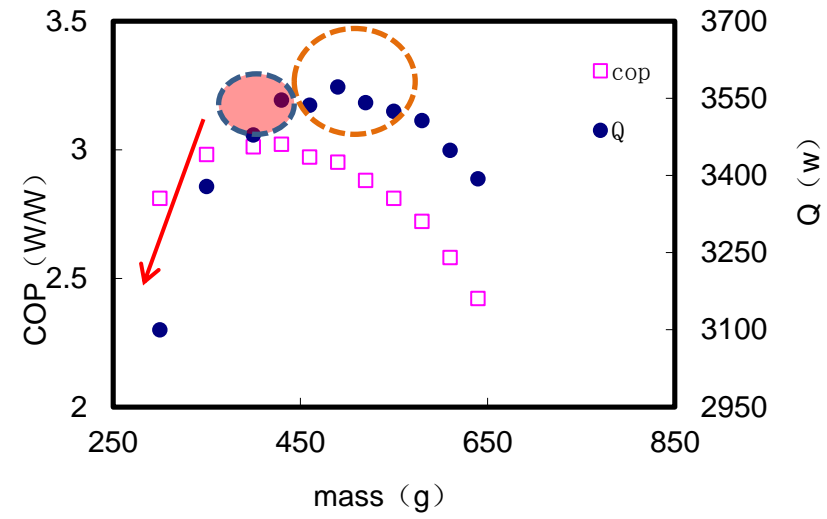




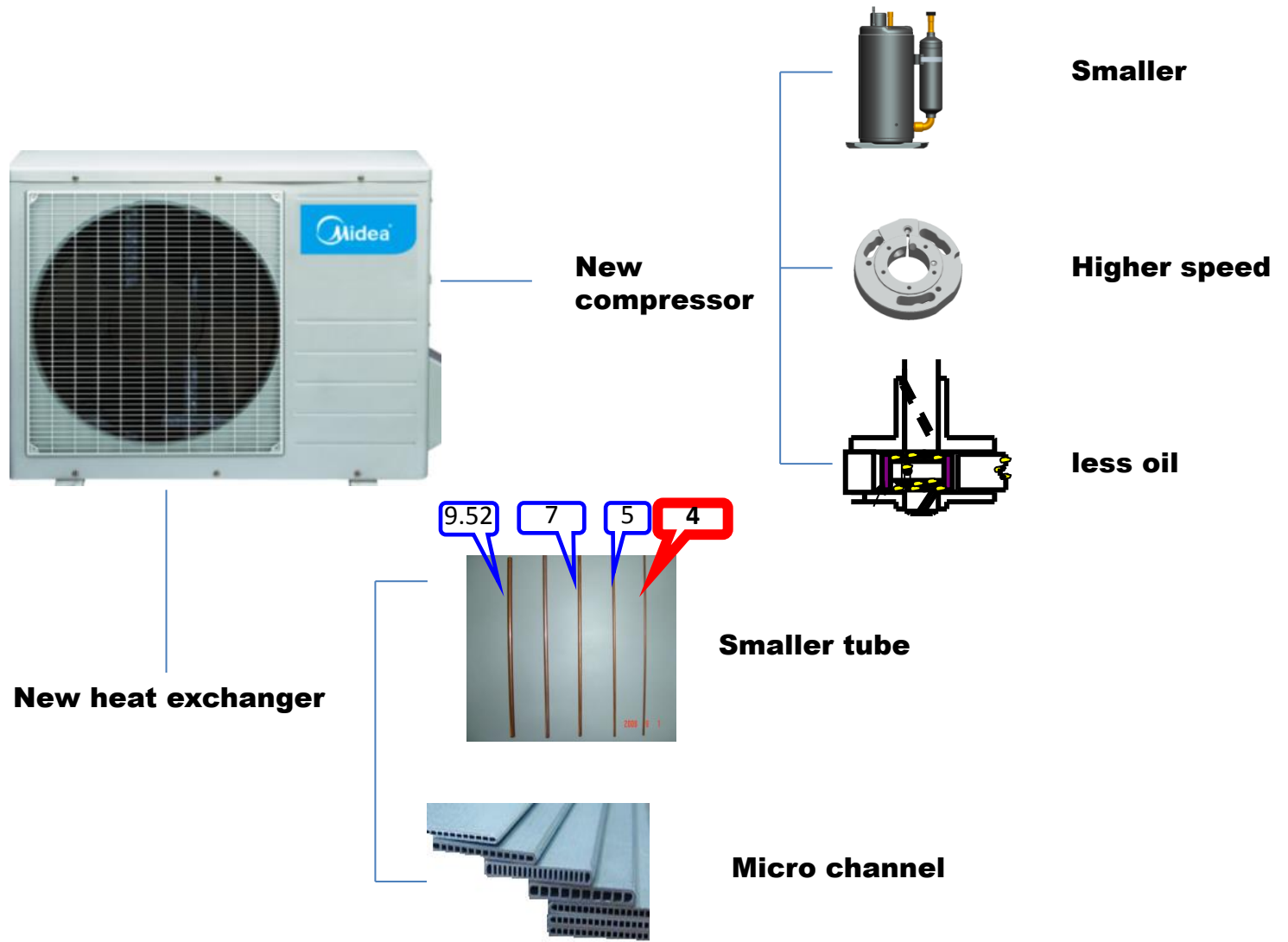
$$m_{\max} = 2.5 \times (\text{LFL})^{(5/4)} \times h_0 \times (A)^{1/2}$$



• Performance decrease



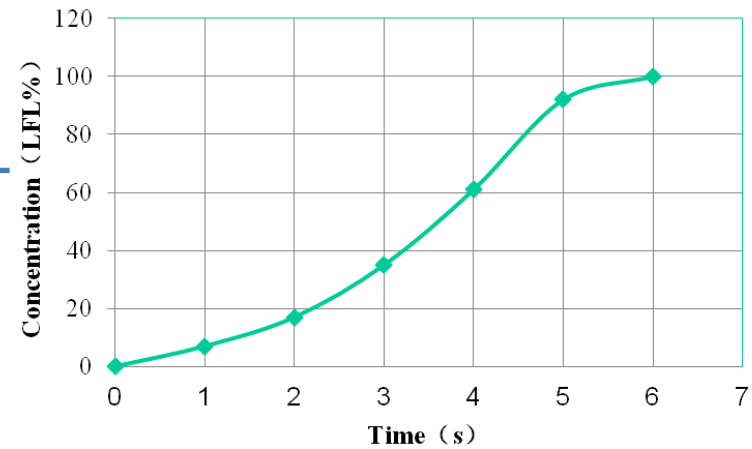
• Potential risk of insufficient refrigerant like longer connecting tube



- **Leak simulation tests**
The leak rate shall be maintained at $25\% \pm 5\%$ of the total appliance charge in 1 min.



R290 Concentration in the electronic box when leak



Easy to get to the LFL with ordinary R22 RAC structure



Sealed electric box

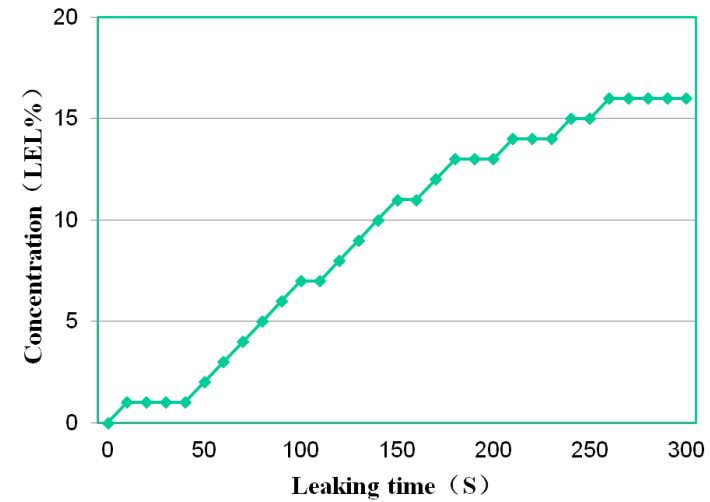


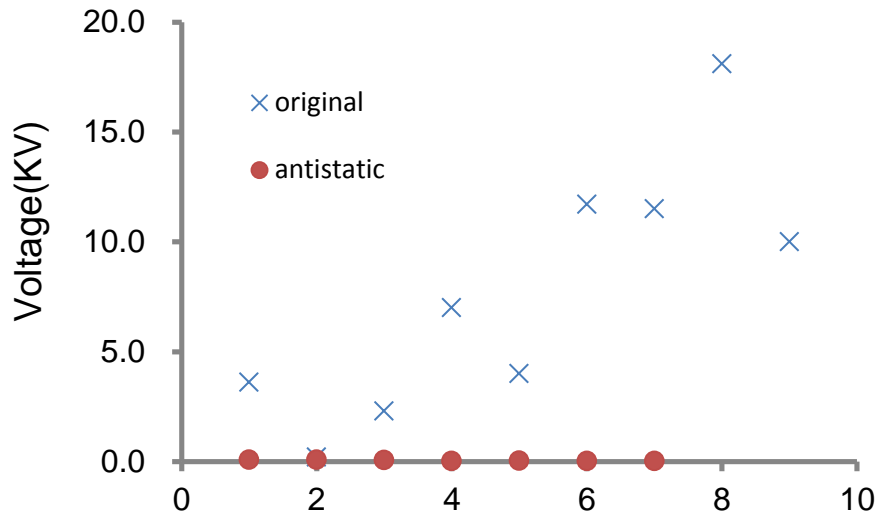
non-accumulation body



Qualified ex-proof components

Leak test (R290)





C E R T I F I C A T E



of Conformity
Low Voltage Directive 2006/95/EC

Registration No.: AN 50247298 0001

Report No.: 16050481 001

Holder: GD Midea Air-Conditioning
Equipment Co., Ltd.
Midea Industrial City,
Beijiao, Shunde
Foshan, Guangdong
P.R. China

Product: Air Conditioner
(Split Type Air Conditioner)

Identification: MS11M-09HRFN7-QRC4
(indoor: MS11M-09HRFN7-QRC4, outdoor: MOB-09HFN7-QRC4)

Serial No. : n.a.
Remark : Refer to test report 16050481 001 for details.

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with all revision of Annex I of Council Directive 2006/95/EC, in its latest amended version, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex III of the Directive.

Certification Body



Date 30.01.2013

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE



国家防爆

防爆电气设备 防爆合格证(附页)

编号: CNEEx13.1152X

本产品配用的防爆电气产品如下:

序号	产品名称	型号、规格	防爆标志	数量
1	防爆室内电控盒组件	AU-KFR35G/BP3N8Y-11M(D0),D.11.DK1 1(Ex-nC-IIB-T6),I 220V~240V 100W	Ex nC IIB T6 Gc	1
2	无刷直流电机	WZDK20-38G 310VDC 20W	Ex nA II T4 Gc	1
3	步进电机	MP24GA6 12VDC	Ex nA II T6 Gc	1
4	防爆电抗器	R1005L(Ex-nA-II-T4) 220V~240V 10A	Ex nA II T4 Gc	1
5	防爆四通电磁阀	DSF-4 220V~240V 6W	Ex nA II T6 Gc	1
6	防爆室外电控盒组件	AU-KFR35W/BP3N8-120(D0),D.13.DK1 Ex-nC-IIB-T6),I 220V~240V 100W	Ex nC IIB T6 Gc	1
7	无刷直流电机	WZDK35-38G 310VDC 35W	Ex nA II T4 Gc	1

颁发日期 2013年4月8日

中心主任



国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲景北路20号 邮政编码: 473008
电话: 0377-63258564 传真: 0377-63208175 Http://www.china-ex.com



国家防爆

防爆电气设备 防爆合格证

编号: CNEEx13.1152X

制造单位 广东美的制冷设备有限公司
地址: 佛山市顺德区北涌镇林港路
产品名称 防爆分体挂壁式空调器
型号规格 MS11M-12HRFN8-QD0G 220V~240V 制冷量 3500W
防爆标志 Ex mb nA nC IIB T4 Gc
产品标准 QMK-J21.017-2012
总装图号 MS11M-12HRFN8-QD0G

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
GB3836.1-2010《爆炸性环境 第1部分: 设备 通用要求》
GB3836.8-2003《爆炸性气体环境用电气设备 第8部分: “n”型电气设备》
GB3836.9-2006《爆炸性气体环境用电气设备 第9部分: 浇封型“m”》

记事 潜在静电电荷危险, 详见使用说明书。

本证有效期 2013年4月8日至2018年4月7日

颁发日期 2013年4月8日

中心主任



国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲景北路20号 邮政编码: 473008
电话: 0377-63258564 传真: 0377-63208175 Http://www.china-ex.com



注: 本证书仅对与认可文件和样品一致的产品有效。 登陆网站 输入数码 查询真伪

0374 1621 5825 9548

**R290 RAC
(cooling only)**

2010

2011

**• R290 RAC (1.5HP)
• R290 RAC (1HP,Heat
pump, inverter)**

**• Portable R290 AC
• Certification of TUV
and CNEX**

2012

2013

**• R290 RAC (2HP,Heat
pump, inverter)
• Production line**



R290 production line supported by MLF



Acknowledgement

Thank MLF for supporting the R290 production line in Midea

Particularly grateful to UNIDO, FECO and CHEAA





 **ATMO**
sphere
technology summit
natural solutions
3 - 4 June 2013 in Vienna

Thank you very much for your attention